The nepheline-soda-limestone sinter process, Sumitomo's alum process and Alcan's D/P process received relatively low scores and were eliminated from further consideration. It was decided to drop the Showa process from the list, even though it scored higher in the decision analysis than the Alcan-D process, because it is purely a disposal technique that is no doubt more expensive to build and operate than the base case. This would result in an extremely low score for the "best economics" criteria in the decision analysis. Because the Alcan-D process has the potential for cost savings, the Joint Study Group agreed that a high score for the "best economics" criterion in the Alcan-D process would put that process ahead of the Showa process.

The number of processes for capital and operating cost evaluations was thus reduced to three, namely, Alcan D, Alcan Mini L and Anaconda 116.

4.4 Description of Processes Examined

4.4.1 - Base Case - Spent Potlining Disposal

A landfill method developed by Anaconda was taken in this study as the minimum requirement or base case for disposal of potlining. This method has been approved by EPA for disposal of toxic wastes and has been in use at Anaconda's Columbia Falls smelter since 1980.

The intention of this procedure is to landfill potlining in such a way as to prevent any contamination of surface or ground waters, to rehabilitate with native species and to provide for future monitoring.

Figure 3 shows a plot about 300 ft. by 400 ft. with a slope of about 3 percent from lower right to upper left corner. After clearing and excavating as required, the 2.6 acre site is covered with 2 feet of clay and 4 inches of gravel. The pad is contoured so that surface water drains to the lower right hand corner where it can be collected in a sump. The completed landfill will contain about ten feet of potlining and four feet of clay, gravel and top-soil. A diversion berm is constructed as shown to divide the pad approximately in half and provide storage for about 6,500 tonnes of potlining.

In operation, disposal of material as received from the demolition operation is started in the lower right hand corner at A and progresses in the direction of the diversion berm B. Surface water from the area above berm B is diverted away from the pad at C. Similarily water from the area between the berm and the potlining will be diverted away from the pad. Water which has contacted the potlining will drain through the gravel layer and by the diversion channel to the sump. If climatic conditions are suitable, the water from the sump can be pumped to an evaporation pond and/or sprayed on the potlining pile to enhance evaporation. Alternatively this effluent will be pumped to a treatment plant for the removal of cyanides, fluorides, etc. For the purpose of the base case we have assumed that such a plant would be required.

As the potlining disposal progresses up the slope it is levelled at regular intervals and covered with an impermeable clay cap and a topsoil cover which is seeded with native vegetative species. Surface water from the capped area can be directed away from the pad. Any seepage through the clay cap will be captured in the sump. Provision is made for six monitoring wells around the pad to test ground water for contamination from the potlining. Essential aspects are illustrated in Figures 3 to 5 inclusive.

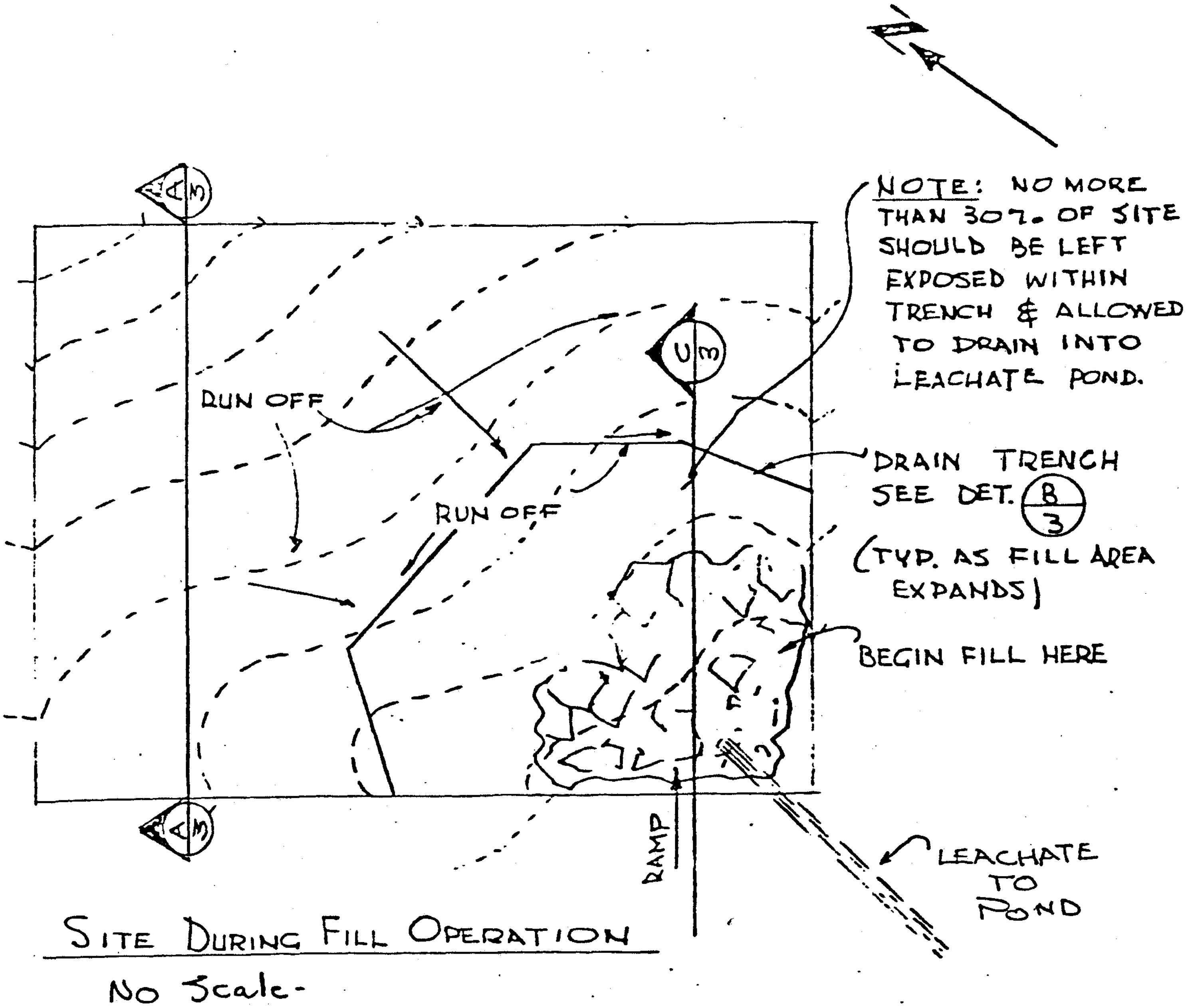

FIGURE 3

TOP VIEW OF HAZARDOUS WASTE DISPOSAL SITE

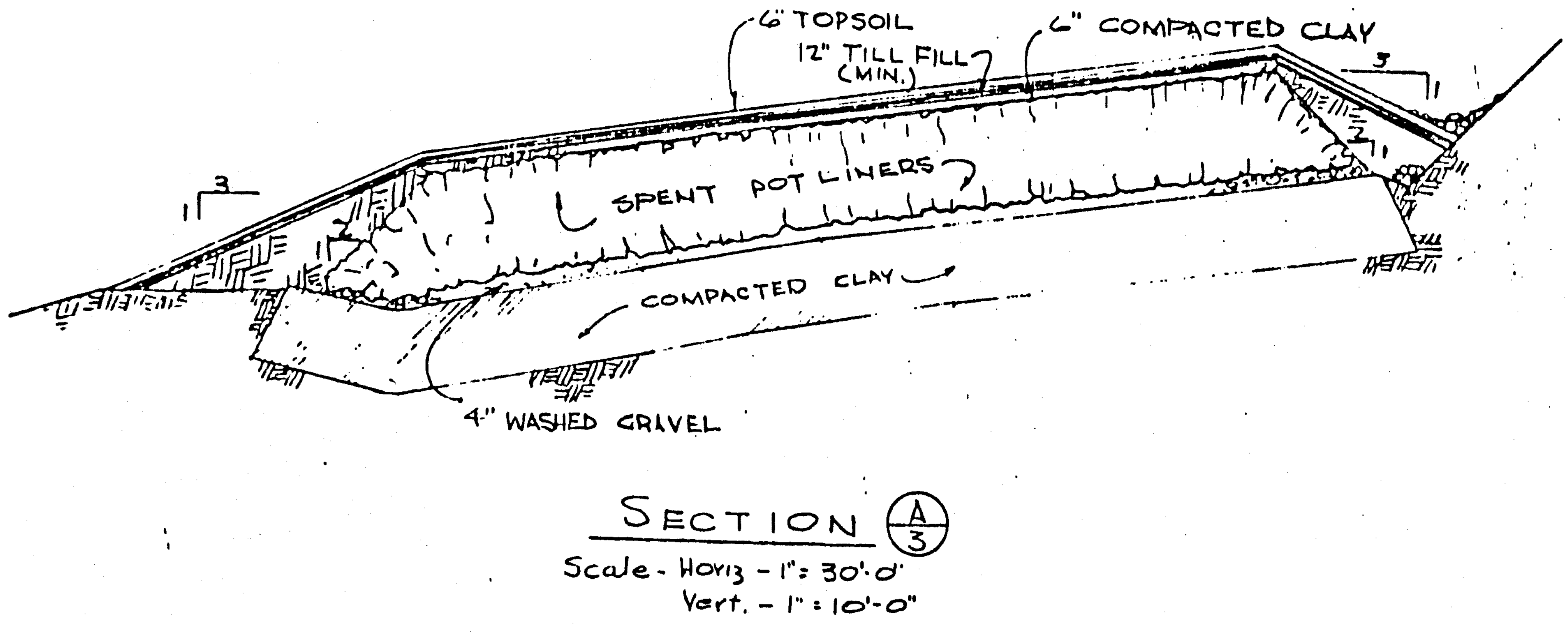

FIGURE 4

SIDE VIEW OF COVERED LANDFILL SECTION

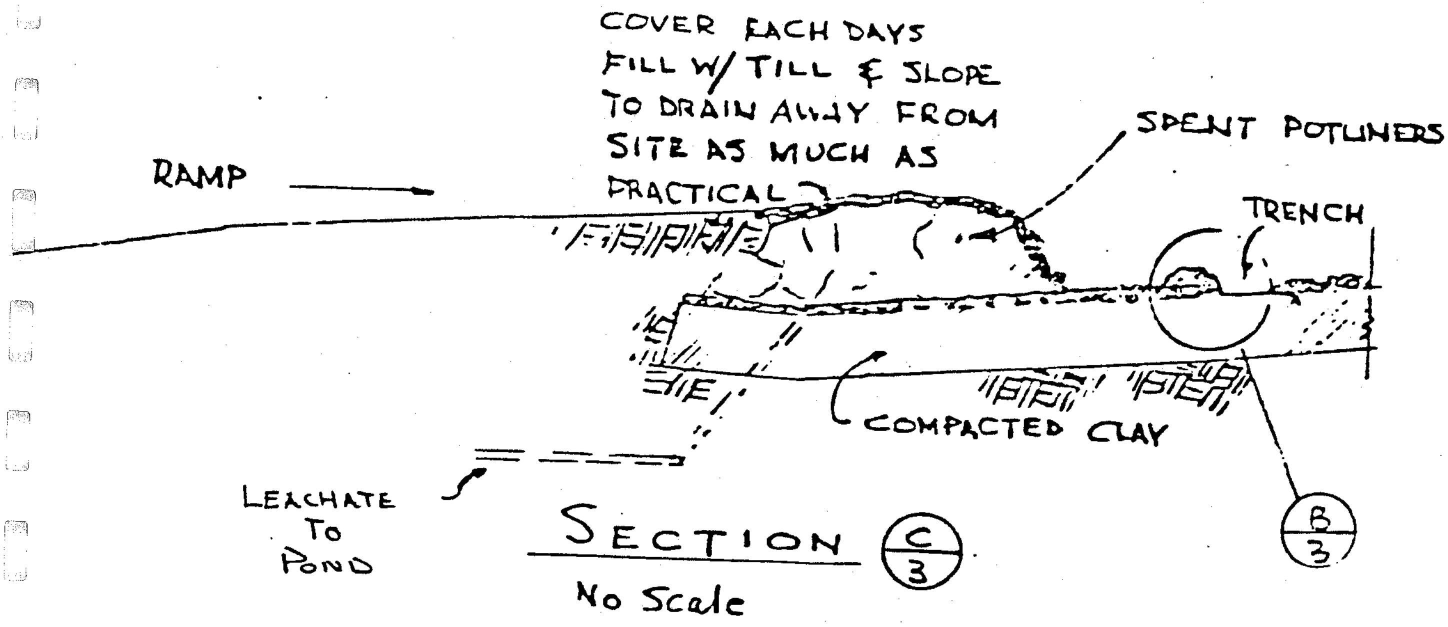

FIGURE 5A

ACTIVE AREA SIDE VIEW

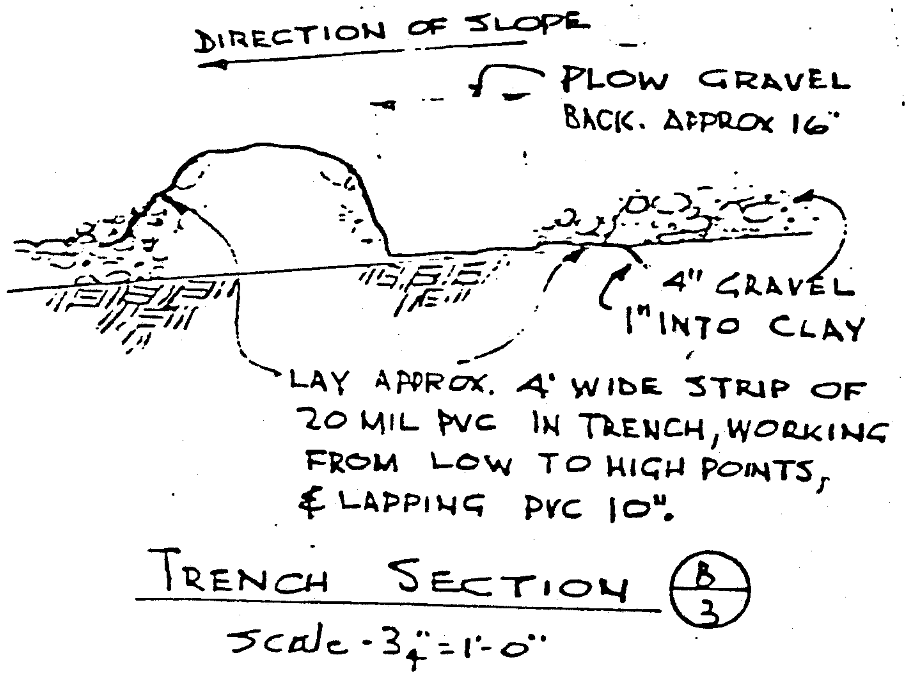

FIGURE 5B

TRENCH SECTION